INTERURBAN ELECTRIC RAILWAY BRIDGE YARD SHOP
(Bay Bridge Paint Shop)
INTERSTATE 80 AT ALAMEDA COUNTY POSTMILE 2.0
OAKLAND VICINITY
ALAMEDA COUNTY
CALIFORNIA

HAER No. CA-164

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
NATIONAL PARK SERVICE
WESTERN REGION
DEPARTMENT OF THE INTERIOR
SAN FRANCISCO, CALIFORNIA 94107

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HISTORIC AMERICAN ENGINEERING RECORD

INTERURBAN ELECTRIC RAILWAY BRIDGE YARD SHOP
(Bay Bridge Paint Shop)

HAER No. CA-164

Location: Interstate Highway 80 at Alameda County Postmile 2.0, Oakland vicinity, Alameda County, California.

UTM: 10-560420.4186210
Quad: Oakland West, Calif. 7.5', 1959, photorevised 1968

Date of Construction: 1938-9

Present Owner: California Department of Transportation
111 Grand Avenue
Oakland CA 94612

Present Occupant: California Department of Transportation.

Present Use: Storage of paint and related equipment for maintenance of the San Francisco - Oakland Bay Bridge, as well as office and crew facilities for bridge paint maintenance crews.

Significance: The Interurban Electric Railway (IER) Bridge Yard Shop has been determined eligible for inclusion on the National Register of Historic Places, significant under criteria A and C, as a rare surviving element of the IER, for its historical association with the Bay Bridge, and as an excellent example of International Style theory and design as applied to industrial buildings.

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Environmental Program
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I. DESCRIPTION

The Interurban Electric Railway Bridge Yard Shop is a steel frame building, generally aligned on an east-west axis, and clad in Transite® corrugated asbestos panels. The windowed sawtooth roof and the continuous ribbon window side walls of steel industrial sash provide the building with extensive natural lighting. Measuring 75 x 340 feet, the building provides 24,300 square feet of interior space. The ends are three bays wide, and large wooden bi-fold doors originally provided access for the interurban railway cars which the building serviced; the central door on the east end of the building, and the southerly door on the west end, have been replaced with roll-up metal doors. The main block of the building is two stories in height, while a one-story lean-to along the south side affords office and crew space. The interior, originally one long, unbroken space with three tracks running longitudinally through the building, is now divided into three large rooms by transverse walls of plasterboard construction. The tracks have been removed, and the inspection/work pits beneath them have been filled to create a smooth, continuous floor.

II. ARCHITECTURAL AND ENGINEERING INFORMATION

This building was erected in 1938 to provide maintenance and light running repairs to the cars of the Interurban Electric Railway which would operate over the Bridge Railway on the lower deck of the San Francisco-Oakland Bay Bridge. The State's original plan had been for a fleet of State-owned, streamlined articulated cars to operate between the East Bay Terminal (today's National Register-eligible Transbay Transit Terminal) in San Francisco and a union terminal adjacent to the Key System's Emeryville Shops, where patrons would connect with Key System, Interurban Electric Railway, and Sacramento Northern Railway Cars. This plan was ultimately discarded, and State funds were instead used to help pay for improvements to the equipment of the three railways, and to construct new yards and shop buildings adjacent to the East Bay approach to the Bridge, on the south side of the Key System Mole. Because of differences in equipment dimensions and operating voltages, the Key System and Interurban Electric yards and shops were separate, though the buildings were essentially identical (the Key System Shop was demolished in the 1970s).

When the Interurban Electric Railway ceased operation in 1940, the Key System used the building until that line's ultimate demise in 1960, after which the California Department of Transportation (Caltrans) acquired it for maintenance use.

The Interurban Electric Railway Bridge Yard Shop is an excellent example of 1930s architectural theory regarding industrial buildings. The views of the period toward industrial architecture were set forth clearly in the introduction to *Industrial Architecture*, published in 1935. The designer of such buildings, it was written, whether architect or engineer, "...must be a good builder, have a sympathetic understanding of the workers, be a good organizer..." since these buildings

"...affect...the workers, as well as the efficiency of the works." The designer "...must above all things make the building 'work'--work efficiently and economically, for without this there will be loss of energy, unproductive effort and waste of money." In an extended paraphrase of Louis Sullivan's premise that "form follows function," this 1935 view of industrial architecture stated, "The exterior must be dictated by the requirements of the interior; the size and shape of windows must depend upon the light required and not upon any preconceived ideas of the relation of solid to void." The modern industrial building thus could be of steel frame construction with infill of thin panels and glass, having large interior spans for unobstructed working floor space. In keeping with thc development of the International style, consideration of past architectural styles was viewed as a vanity to be avoided. The Interurban Electric Railway Bridge Yard Shop building clearly reflects these tenets. The well-lit, spacious interior utilized inspection/work pits beneath the tracks to provide access to traction motors, brake system, and other underfloor operating components of the cars. The cavernous interior of the building was divided into three large rooms after its acquisition by the State of California, and is now used for paint and equipment storage; the tracks have been removed, inspection/work pits filled, and a smooth, continuous asphalt floor laid.

III. HISTORICAL INFORMATION

The Interurban Electric Railway Bridge Yard Shop building is a rare surviving element of the Southern Pacific Railroad's once-sprawling interurban railway which at once served and helped to develop the East Bay. Bom under the drive of E.H. Harriman in 1911 as the Oakland, Alameda and Berkeley Railway, and reorganized in 1934 as the Interurban Electric Railway, the system passed into oblivion on the eve of World War II. In the ensuing years, most of the physical plant has ceased to exist, and today only the West Oakland Substation No. 2 and the West Alameda Car Shop (converted to a winery) remain from the Oakland, Alameda & Berkeley Railway period, while only this building and a portion of the 26th Street Junction Bridge remain of the Interurban Electric Railway. Both of the latter two structures have clear associations with the Bay Bridge as well, since both were built to serve the trains directly linking the East Bay with San Francisco.

The Southern Pacific's electric lines, which ultimately became the Interurban Electric Railway, date to June 1, 1911, when they replaced steam-powered suburban service which in turn dated back to August 2, 1863. These suburban lines had been the brainchild of Colis.P. Huntington, who had sought to develop a total transportation system, operating mainline railroad, short line railroads, ferries, river steamers, steamships, and street railway systems. (That he and his "Big Four" partners--Charles Crocker, Leland Stanford, and Mark Hopkins--were successful was evident in the political and economic control which Southern Pacific exerted on California for decades.)

The pattern of acquisition and control as espoused by Huntington was followed in the East Bay, and the Central Pacific Railway (later Southern Pacific Railroad), came to own all the local steam lines in Alameda county. Under Central Pacific control, these local lines came to use the Alameda Mole that Central Pacific had acquired from (and with) the narrow gauge South Pacific Coast Railway. At the Mole, trains interfaced with ferry boats serving San Francisco. Following Huntington's death in 1900 (he was the last survivor of the Big Four), E.H. Harriman acquired control of Southern Pacific, and he began rapid improvements and modernization to this and all of the railroads he controlled, standardizing virtually everything from track spikes to locomotives. Harriman laid the plans to electrify the steam-powered suburban lines in Alameda County to allow greater competition with Francis M. "Borax" Smith's electrified Key System. Smith had developed the Key System to directly confront Huntington, and Key offered substantial savings in commute times to its patrons.

Under the name San Francisco, Oakland & San Jose Railway, Smith formed the Key System in 1902 by consolidating East Bay streetcar operations. Smith had begun his acquisitions of streetcar lines in 1893, as direct competition to Southern Pacific's steam-powered local trains. Smith constructed a 3-1/4 mile pier from the Oakland shoreline westward nearly to Yerba Buena Island to serve his ferries. This gave his operation a decided advantage, since his pierhead was much nearer San Francisco than that of the Southern Pacific. A shorter ferry run and better train schedules offered his patrons a reduced commute time. By the early teens, however, Smith had overextended his investments on all fronts, and was forced into bankruptcy. Reorganized, the Key System replaced the original timber pile pier with a solid fill pier completed in 1916 (though portions of the original pier remained until 1932). The System took its name from the shape of the pier, and formally became the Key System Transit Company after another reorganization in 1923. By 1924 the Key Pier was handling no fewer than 800 trains per day.

The Harriman line was known as the Oakland, Alameda & Berkeley Railway. Development of the Oakland, Alameda & Berkeley by Harriman was part of his general improvement of lines in Bay Area, including an intent to electrify the San Francisco Peninsula lines (today's Caltrain). During the 1906 upgrade, these lines were built to clearances required for the never-completed electrification. Harriman built the Dumbarton Cutoff across the south end of San Francisco Bay between Newark and Redwood City as part of this proposed electrification on both sides of the Bay, and he intended the Oakland, Alameda & Berkeley to connect to San Jose.

Harriman accomplished electrification of the East Bay suburban lines between 1905 and 1912. The effort was delayed by the 1906 San Francisco earthquake, and was completed after Harriman's death in 1909. Originally estimated at $4 million, the actual cost of the effort was $10.6 million. Southern Pacific completely rebuilt the existing suburban lines, and added 21 miles of new lines.

To maintain self-sufficiency, Southern Pacific built its own generating station instead of buying power. The Oakland, Alameda & Berkeley represented the first railroad use of the high voltage overhead system developed by General Electric in 1907, and the American Institute of Electrical Engineers recognized the Fruitvale power house (no longer extant) as an outstanding achievement at the time of its building. Substations at West Oakland and North Berkeley converted Fruitvale's 13,200-volt power to 1200 volts for system use; only the former substation remains extant. Substation No. 2 at West Oakland served all lines between Webster Street in Oakland and Shellmound in Emeryville, including West Alameda, Alameda Pier, and the Oakland Pier. It also provided power for the Southern Pacific shipyard at West Oakland, the West Oakland main line shops, Oakland Pier, and the then-new 16th Street Station, as well as powering arc lights at West Oakland yards, Oakland Pier, and along 18th, Franklin, and Webster Streets.

Cars were ordered in 1911, and electrified service began late that year, though the system was not finished until early the following year. Ironically enough, while competing successfully with the Key System, the Oakland, Alameda & Berkeley was doomed to failure by the dawn of the auto age, as well as by union rules which required the use of full train crews on cars which could have been operated by one man or, at most, two men. Revenues failed to equal expenditures, and the line ran "in the red" almost from its inception.

Southern Pacific reorganized the Oakland, Alameda & Berkeley as the Interurban Electric Railway on November 14, 1934, in anticipation of the construction of the San Francisco-Oakland Bay Bridge. During the early planning for the Bay Bridge, a number of alternatives for rail service across the lower deck were considered. The State's first proposal called for shuttle trains of State-owned, streamlined articulated cars connecting the East Bay Terminal (today's Transbay Transit Terminal) in San Francisco with a union terminal adjacent to the Key System Shops in Emeryville, where passengers would connect with the trains of the Key System, the Interurban Electric Railway, and the Sacramento Northern Railway. When the decision was ultimately made to have the three railways operate their own cars across the bridge, plans were prepared for a new rail yard and shops adjacent to the East Bay approach to the Bridge, on the south side of the Key System Mole. This led to the problem of connecting the new yard with the Interurban Electric Railway main line, itself located on the east side of, and parallel to, the Southern Pacific main line. A number of alternatives were considered for that connection.

In December 1932, Southern Pacific proposed to route the Interurban Electric Railway trains from the Bridge Yards directly to the Southern Pacific 16th Street Station, whose second story was served by the Interurban Electric Railway. Here, the track would have risen on a viaduct and diverged while crossing over the Southern Pacific main line tracks. Seventh Street and Alameda trains would have swung south and joined the existing elevated at 14th Street; Berkeley District trains would have swung north to join the elevated structure near 18th Street.

Other alternatives considered by the railroad would have placed the wye just north of station, between 19th and 20th Streets, or south of the station, angled to the northwest, or would have led the Oakland lines off just north of station, while the Berkeley lines would have angled out through Emeryville and approached the Bridge Yard down the Key System Mole.

In addition to the railroad's alternatives, the State of California proposed a plan which, it was asserted, was the least complicated and which ultimately was adopted. This plan caused a minimal rerouting of Key System trains. The Interurban Electric Railway trains used a double-tracked lead from the Bridge Yards to a Y-shaped viaduct near the foot of 26th Street. In an eastward direction, the tracks diverged while passing over the Southem Pacific main line; the point of divergence was named 26th Street Junction. One pair of tracks, used by Seventh Street and Alameda trains, curved southward and descended to ground level, where they joined the former Berkeley main line at 22nd Street. The other pair of tracks, used by Berkeley District trains, curved northward and joined the Berkeley main line at 32nd Street.

The State's plan, though ultimately adopted, was not without some opposition. Southem Pacific objected to the State's proposal on operating grounds: apparently the original proposal for carrying the Interurban Electric Railway tracks across the Southem Pacific main line tracks did not provide for grade separation. Further, Southern Pacific did not like the notion of placing the wye just where the Interurban Electric Railway cars were descending a 4% grade from the elevated tracks at the Oakland station. Further, placement of the wye there necessitated a "backhaul" for all Berkeley patrons, which would not have been the case had Southern Pacific's preferred alternative been adopted.

After five years of planning, the 26th Street Junction Bridge was built in 1937-8 to plans prepared by the California Department of Public Works. During this time, construction of the Bridge Yard was proceeding, on fill adjacent to the east approaches to the Bay Bridge. With the 26th Street Junction Bridge completed and access gained to the Bridge Yard, the Interurban Electric Railway began construction of the Bridge Yard Shop Building in 1938, completing the building in 1939.

Following completion of all the elements of the Bridge Railway system, the cars of the Interurban Electric Railway, the Key System, and the Sacramento Northern Railway were routed across the Bay Bridge into the East Bay Terminal (now the Transbay Transit Terminal) in San Francisco. Still, ridership never reached projected levels, and the Interurban Electric Railway lasted but a short while longer: citing economic loss due to auto competition, Southern Pacific filed for permission to abandon Interurban Electric Railway service on February 26, 1940, and the last Interurban Electric Railway train rolled on July 4, 1940. Some Interurban Electric Railway track was annexed to Key System, while other portions remained in use due to wartime demands, but the Interurban Electric Railway formally eeased to exist on January 18, 1941.

Following abandonment of the Interurban Electric Railway in mid-1940, the line's physical plant was handled in a number of ways. Some tracks were dismantled and removed; some were turned over to the Key System. Apparently the Santa Fe Railway obtained ownership of the 26th Street Junction Bridge, using it for access to the Oakland Army Terminal, for in 1944 they granted the south leg of the bridge to the Army for conversion to vehicular use. Until recently the bridge remained with catenary supports and catenary wire removed, the southern leg converted to vehicular use and closed, and the northern leg still in rail freight use. The deteriorated southern leg was recently demolished. As for the Bridge Yard Shop building, the Key System acquired the building and continued to use it to maintain its trains, until it also finally succumbed to the automobile and buses in 1960. At that time the State of California acquired the shop building for use in supporting the equipment and forces involved in the continuous maintenance of paint on the San Francisco-Oakland Bay Bridge.

The Interurban Electric Railway Bridge Yard Shop is a rare surviving element of the Southern Pacific's once-sprawling interurban railway system which at once served and helped to develop the East Bay. Born under the drive of E.H. Harriman in 1911 as the Oakland, Alameda and Berkeley Railway, and reorganized in 1934 as the Interurban Electric Railway, the system passed into oblivion on the eve of World War II. In the ensuing years, most of the physical plant has ceased to exist, and today only the West Oakland Substation No. 2 and the West Alameda Car Shop (converted to a winery) remain from the Oakland, Alameda & Berkeley period, while only this building and the northern leg of the 26th Street Junction Bridge remain of the Interurban Electric Railway. Both of the latter two structures have clear associations with the Bay Bridge as well, since both were built to serve the trains directly linking the East Bay with San Francisco.

The Interurban Electric Railway Bridge Yard Shop was determined to meet National Register criteria A and C, as a rare surviving element of the IER, for its association with the Bay Bridge, and as an excellent example of International Style theory and design as applied to industrial buildings. Because virtually all related railway structures have been removed, the boundary of this historic property is considered to be the perimeter of the building itself.

IV. SOURCES

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V. PROJECT INFORMATION

In order to achieve compliance with the requirements of the Americans with Disabilities Act (ADA), certain porches and entries to the one-story lean-to on the south side of the building, containing offices break rooms, restrooms, and other employee spaces, will be modified. This documentation was undertaken as project mitigation, under the California Environmental Quality Act and California Public Resources Code Section 5024.5(a), in order that there is a permanent record of the building prior to project modification. While there is no federal involvement in this project, the California Department of Transportation will donate the original documentation set to the HAER collection, with copies to local and state archival repositories.